Remarks:

Applicants respectfully request reconsideration and withdrawal of the outstanding Office Action rejections in view of the following remarks.

Claims 1-9 are pending in the application.

Claim Rejections- 35 U.S.C. § 102

In item 3 of the Office Action, claims 1-7 and 9 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kayamoto *et al.*, U.S. Pre-Grant Publication No. 2003/0186156. Applicants traverse.

Claim 1 of the present application covers a resin-coated carrier for an electrophotographic developer which is constituted with spherical ferrite particles comprising an average particle diameter of 20 to 50 μm, surface uniformity of 90% or more, average sphericity of 1 to 1.3, and standard deviation of the sphericity of less than 0.15. In contrast, Kayamoto does not disclose the average sphericity and standard deviation of the sphericity of the particles, even though the average particle diameter and surface uniformity of the resin-coated carrier in Kayamoto overlap with the ranges claimed, as the Examiner pointed out. The Examiner argues that the resin-coated carrier disclosed by Kayamoto inherently includes spherical ferrite particles with average sphericity and standard deviation of the sphericity within the ranges claimed, even though Kayamoto does not disclose the average sphericity and standard deviation of the sphericity of the particles.

An explanation of the resin-coated carrier disclosed in Kayamoto, as well as the process for producing the same disclosed therein, will be useful in understanding the distinction in the present invention. The resin-coated carrier in Kayamoto includes a ferrite core comprising iron oxide, primarily having a spinel structure, and having a volume-average particle size of 20 to 45 μm and a resin coat, along with a magnetization of 65 to 80 emu/g in a magnetic field of 1 KOe, said core having an electric current value of 50 to 150 microamperes and a surface smoothness uniformity of 75% or higher, and the amount of said resin coat is 0.1 to 5.0% by weight based on the core. (See Claim 1).

The process of producing the resin-coated carrier for the electrophotographic developer of Kayamoto includes granulating a slurried raw material, firing the granules, disintegrating the fired product, classifying the resulting particles to obtain the core, and coating the core with a resin, wherein the primary particle size DS10 and DS90 of said slurried raw material satisfies a particular formula. (See claim 2). The preferred embodiment of the process for producing the carrier for the electrophotographic developer disclosed in Kayamoto further includes removing fine powder and removing additives from the granules by heating, both steps conducted before firing the granules. The firing is carried out in the firing atmosphere having an oxygen concentration of 0.05% or lower at the temperature of 1100 to 1350ºC for a retention time of 1-6 hours at a maximum temperature. The fired product is then released from the firing atmosphere at a temperature of 400ºC or lower. (See claim 3).

The process is fully described in paragraphs 0058 to 0059 in Kayamoto:

> Slurry was spray dried to obtain spherical granules having an average particle size of 30 μm. Fine powder of 20 μm or smaller was removed from the granules by pneumatic classification. The additives, such as the binder, were removed by heating in a rotary kiln at 700ºC.
>
> The granules were fired in an electric oven capable of creating a firing atmosphere as designated under conditions of oxygen concentration: 0.05% or lower; firing temperature: 1300 ºC; retention time at a maximum temperature: 5 hours; and fired product temperature at release from the firing atmosphere: 350 ºC.
>
> The carrier core was surface treated in a continuous rotary kiln at an oxygen concentration of 21% and a temperature of 500 ºC and then rotated in a rotary container to be given mechanochemical stress to have an increased surface resistivity.

In the present invention, the resin-coated carrier for the electrophotographic developer comprises the spherical ferrite particles having an average particle size of 20 to 50 μm, a surface uniformity of 90% or more, an average sphericity of 1 to 1.3, and a sphericity standard deviation of 0.15 or less. (See claim 1). The process for producing the resin-coated carrier for an electrophotographic developer includes weighing and mixing the ferrite raw materials, crushing the mixture, granulating the obtained slurry, sintering the granules, and coating the sintered material with a resin, characterized in that the sintering is performed at a sintering temperature of 1200ºC or more while the granules are made to flow by fluidizing means. (See claim 4). In the preferred embodiment of the production method, sintering temperature is 1200 to 1400ºC, and the sintering time is 0.1 to 5 hours (See claim 5). In a further embodiment, the granules are pre-sintered at 500 to 700ºC for 0.1 to 5.0 hours (See claim 6) and the sintering is performed by the rotary sintering furnace (See claim 7). The

electrophotographic developer of the present invention is comprised of the resin-coated carrier according to claim 1 and the toner (see claim 9).

In sum, the resin coated carrier for the electrophotographic developer according to the present invention is one in which a carrier core material having a small particle size, a high sphericity and surface uniformity, and a low standard deviation is coated with a resin, and has no coating nonuniformity and no exposed parts of the core material, along with little carrier scattering. The production process according to the present invention allows the above resin-coated carrier to be produced in a stable productivity. Further, the electrophotographic developer of the present invention gives a high-quality image and excellent durability, particularly due to the use of the above resin-coated carrier. (See specification, p. 0036).

From the above descriptions, the resin-coated carrier disclosed in Kayamoto cannot be the resin-coated carrier claimed in the present application. Kayamoto does not disclose the average sphericity and the standard deviation of the sphericity of the particles disclosed therein, though the Examiner contends that the particles in Kayamoto are made by a sufficiently similar process to warrant a presumption that the particles disclosed in Kayamoto have the same properties that are claimed in the present application. However, a careful examination of the process in Kayamoto and the specification rebuts this presumption. In Kayamoto, the particles are made by a process including grinding the mixture to prepare a slurry, granulating the slurry, removing the binder in a rotary kiln, and then sintering in an electric oven capable of creating a

firing atmosphere as designed under conditions of oxygen concentrations of 0.05% or lower. As shown in comparative examples 1-3 of the present application, sintering the spherical granules in an electric furnace capable of creating a firing atmosphere (here, a tunnel-type electric sintering furnace) resulted in particles with a sphericity standard deviation of greater than 0.15. In addition, the surface uniformity of the particles produced in comparative examples 1-3 shows values between 71% and 80%, which is significantly less than 90%. As such, it is clear that the resin-coated carrier disclosed in Kayamoto is not a resin-coated carrier according to claim 1, and thus cannot anticipate claims 1-3 and claim 9.

Furthermore, the process disclosed in Kayamoto cannot anticipate claims 4-9. The examiner is of the opinion that Kayamoto describes using a rotary kiln for both calcining and sintering the particles on page 3 of the Office Action. However, Kayamoto discloses removing the binder included in the slurry of granules by heating the particles at 700ºC in the rotary kiln, and then sintering in an electric oven capable of creating a firing atmosphere at 1300ºC for 5 hours. Only after sintering are the particles coated with a silicone resin in a fluidized bed coating apparatus. Kayamoto, p. 0061. In practice, this means that the particles are stationary and fixed during sintering. However, claim 4 requires that sintering be performed at a sintering temperature of 1,200 ºC or more while the granules are made to flow by fluidizing means. Kayamoto does not disclose sintering where the granules are made to flow by a fluidizing means. Thus, Kayamoto

cannot anticipate claim 4, and thus cannot anticipate claims 5-7 that depend from claim 4.

Claim Rejections- 35 U.S.C. § 103

In item 4 of the Office Action, claims 6 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kayamoto et al. The Examiner states that while Kayamoto does not teach the specific parameters of pre-sintering time, retort rotation speed, retort inclination, and inlet and outlet hammering frequency, one having ordinary skill in the art would have found it obvious to use parameters that give the desired size and surface uniformity as claimed by applicants. Applicants traverse.

The production method taught in Kayamoto cannot render the claimed production method obvious because it does not teach the step of sintering the granules at a temperature of 1,200ºC while the granules are made to flow by fluidizing means. The production method in Kayamoto includes sintering the particles at 1,300 ºC in an electric oven, and later coating the particles with a silicone resin in a fluidized bed coating apparatus at 250ºC. Kayamoto, p. 0061. Claim 4 instead requires that sintering be performed at a sintering temperature of 1,200 ºC or more while the granules are made to flow by fluidizing means. Kayamoto does not disclose sintering where the granules are made to flow by a fluidizing means. Because Kayamoto does not teach the step of fluidizing the resin during sintering in claim 4, from which claims 6 and 8 depend, and because the Examiner has not cited to any references teaching such a step, variation of the specific parameters of pre-sintering time, retort rotation speed, retort

inclination, and inlet and outlet hammering frequency would not result in the claimed process. As such, the process claimed in claims 6 and 8 would not have been obvious to one of ordinary skill in the art at the time of filing.

In view of the foregoing remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding Office Action rejections. Early and favorable action is awaited.

Respectfully submitted,

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